

ABSTRACT OF THE DISCLOSURE

AN INJECTOR SYSTEM INCLUDES A POWERED INJECTOR, A PRESSURIZING CHAMBER IN OPERATIVE CONNECTION WITH THE POWERED INJECTOR, A FLUID PATH IN FLUID CONNECTION WITH THE PRESSURIZING CHAMBER, AND A MANUAL CONTROL IN FLUID CONNECTION WITH THE FLUID PATH. THE MANUAL CONTROL INCLUDES AT LEAST ONE ACTUATOR FOR CONTROLLING THE INJECTOR THROUGH APPLICATION OF FORCE BY AN OPERATOR. THE ACTUATOR PROVIDES TACTILE FEEDBACK OF PRESSURE IN THE FLUID PATH TO THE OPERATOR VIA A FLUID CONNECTION WITH THE FLUID PATH. AN INJECTION SYSTEM FOR USE IN ANGIOGRAPHY INCLUDES A SOURCE OF SALINE, A PUMP IN FLUID CONNECTION WITH THE SOURCE OF SALINE TO PRESSURIZE THE SALINE, A SALINE VALVE IN FLUID CONNECTION VIA A FIRST PORT THEREOF WITH AN OUTLET OF THE PUMP, A FIRST CONNECTOR IN FLUID CONNECTION WITH A SECOND PORT OF THE SALINE VALVE, A SOURCE OF CONTRAST, A CONTRAST VALVE IN FLUID CONNECTION WITH THE SOURCE OF CONTRAST VIA A FIRST PORT OF THE CONTRAST VALVE, A POWERED INJECTOR IN FLUID CONNECTION WITH A SECOND PORT OF THE CONTRAST VALVE, A SECOND CONNECTOR IN FLUID CONNECTION WITH A THIRD PORT OF THE CONTRAST VALVE, AND A PRESSURE ISOLATION MECHANISM. THE PRESSURE ISOLATION MECHANISM HAS A FIRST PORT IN FLUID CONNECTION WITH THE SECOND CONNECTOR, A SECOND PORT IN FLUID CONNECTION WITH A PATIENT CATHETER, AND A THIRD PORT IN FLUID CONNECTION WITH THE FIRST CONNECTOR. THE PRESSURE ISOLATION MECHANISM FURTHER INCLUDES A VALVE HAVING A FIRST STATE AND A MUTUALLY EXCLUSIVE SECOND STATE - THE FIRST STATE OCCURRING WHEN THE SECOND AND THIRD PORTS ARE CONNECTED AND THE FIRST AND THIRD PORTS ARE CONNECTED, AND THE SECOND STATE OCCURRING WHEN THE FIRST AND SECOND PORTS ARE CONNECTED AND THE FIRST AND THIRD PORTS ARE DISCONNECTED. THE VALVE IS PREFERABLY NORMALLY BIASED TO THE FIRST STATE AND IS SWITCHABLE TO THE SECOND STATE WHEN FLUID PRESSURE FROM THE POWERED INJECTOR REACHES A PREDETERMINED PRESSURE LEVEL. THE SYSTEM FURTHER INCLUDES A PRESSURE TRANSDUCER IN FLUID CONNECTION WITH THE THIRD PORT OF THE PRESSURE ISOLATION MECHANISM.

KCS
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TOP SECRET